

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No: Q88366

Hiroshi HORIUCHI, et al.

Appln. No.: 10/537,493

Group Art Unit: 1781

Confirmation No.: 4639

Examiner: Hamid R. Badr

Filed: June 3, 2005

For: METHOD FOR PRODUCING FERMENTED MILK AND FERMENTED MILK

**REPLY BRIEF PURSUANT TO 37 C.F.R. § 41.41**

**MAIL STOP APPEAL BRIEF - PATENTS**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.41, Appellants respectfully submit this Reply Brief in response to the Examiner's Answer dated August 6, 2010. Entry and consideration of this Reply Brief are respectfully requested.

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**STATUS OF CLAIMS**

Claims 5, 6, 8-12, 14 and 15 are pending.

Claims 1-4, 7 and 13 are canceled.

Claims 5, 6, 8-12, 14 and 15 are rejected, and are the subject of this appeal.

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 5-6 and 8-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Castberg et al. (U.S. Patent No. 5,453,256 (sic, 5,453,286); hereinafter R1) in view of Kamiya (EP 1 082 907; hereinafter R2).

Claims 5-6, 8-12 and 14-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Castberg et al. (R1) in view of WO-02248470 (hereinafter R3).

### **ARGUMENT**

In response to the Examiner's Answer mailed August 6, 2010, Appellants maintain that (1) the rejection of claims 5-6 and 8-13 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Castberg et al. U.S. Patent No. 5,453,256 (sic, U.S. Patent No. 5,453,286); hereinafter R1) in view of Kamiya (EP 1 082 907; hereinafter R2), and (2) the rejection of Claims 5-6, 8-12 and 14-15 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Castberg (R1) in view of WO-02248470 (hereinafter R3), should be reversed because the above cited references (R1) - (R3), either alone or in combinations, fail to teach or suggest the claimed invention for the reasons of record and the reasons set forth in the Appeal Brief filed May 18, 2010, which is incorporated herein by reference, and further in view of the following.

#### **Summary of Appeal Brief and Applicant's Patentability Arguments against R1, R2, and R3**

Independent claim 5 of the instant application requires the concentration of dissolved oxygen in a mixture comprising milk be reduced *at the start of fermentation by substituting the dissolved oxygen with an inert gas selected from the group of nitrogen, argon, and helium gas.*

In the Appeal Brief filed May 18, 2010, Appellants pointed out that R1 and R2 fails to teach that the dissolved oxygen be reduced to a certain amount at the start of fermentation, as required in claim 1 of the present application. In particular, R1 is silent on the reduction of dissolved oxygen in the medium during fermentation. R1 requires to maintain CO<sub>2</sub> gas to a certain concentration in the medium during the fermentation. Also, in R2, the substitution of the dissolved oxygen with nitrogen gas is carried out before carrying out pasteurization of raw milk

(which occurs before starting fermentation). Accordingly, even if assuming R1 and R2 were somehow combined, the combined teachings do not teach all and every limitation of claim 5.

In the Examiner's Answer, the Examiner did not directly address the above-summarized Appellants' argument.

In the Appeal Brief, Appellants respectfully submitted that the Examiner's assertion that the method as disclosed by R1 and R2 would intrinsically result in fermented milk with the penetration angle and hardness as presently claimed, lacks merit.

Summary of Examiner's Answer

In the Examiner's Answer, the Examiner raises new grounds of rejections based on the references previously relied upon in view of two newly cited evidentiary references, Holland, K.T. et al. (hereinafter "Holland") and Badr, H.R, et al. (herein after "Badr"). The Examiner appears attempting to strengthen his reasoning for rejections with the support of those two newly cited evidentiary references.

In brief, the rational of the Examiner's new grounds of rejections are as follow.

**Regarding R1**, the Examiner maintains that R1 discloses that the stimulation of lactic bacterial growth is, in part, due to removal of oxygen from the milk, and thus, lowering the redox potential. (col. 4, lines 40-43). R1 discloses that high oxygen content (e. g. in milk) retards the growth of yoghurt bacteria. (col. 4, lines 48- 50). According to the Examiner, it is obvious that using an inert gas to remove oxygen from the medium will make the medium more favorable for growth of yogurt bacteria.

**Holland** is cited as disclosing that the concept of lowered redox potential has long been used as an indication of the deoxygenation of growth media. Holland is said to disclose at page 50, lines 20-27 that “oxygen free gas is used to displace oxygen from empty vessels, pipettes, and syringes as well as vessels containing media with and without microorganisms. Since the oxygen removal is by displacement, carbon dioxide is most suitable because of its high density. However, constant flushing of media with carbon dioxide can affect pH; when carbon dioxide is unsuitable, nitrogen or argon with a small content of hydrogen and carbon dioxide is used. Argon although expensive, is recommended because it is denser than air and is inert.” As such, the Examiner concludes that replacement of carbon dioxide in the method of Castberg (R1) would have been motivated and obvious.

**Badr** is cited as disclosing that flasks are kept anaerobically (sparged with oxygen free nitrogen gas after filtering through electrically heated copper tubing). Therefore, according to the Examiner, sparging culture media with an inert gas such as nitrogen was known as a routine procedure to reduce the dissolved oxygen concentration (by gas displacement) in culture media used for the cultivation of anaerobic bacteria. (page 121, first column under 2.2 Growth conditions, at lines 6-10). Since yogurt is the result of the fermentation of milk by anaerobic bacteria, using nitrogen to displace and remove oxygen from milk was motivated and obvious at the time of the invention.

Essentially, the Examiner is asserting that in view of the teaching of Holland and Badr, replacement of carbon dioxide with nitrogen or argon in the method of R1 would have been motivated and obvious.

Applicant Reply and Arguments on Holland and Badr.

First, it is noted that the newly cited Holland and Badr do not add new teachings to the previously cited R1 or R2. It appears to Appellant that a fundamental issue in the newly alleged § 103 rejection is still the same as the rejections raised in previous Office Actions. That is, the Examiner considers, which Appellants disagree, that it would have been obvious to one of ordinary skill in the art to modify R1 to replace the CO<sub>2</sub> used in R1 process with N<sub>2</sub> or argon to reduce the dissolved oxygen in the milk medium to accelerate the growth of the starter culture, and hence reduce the incubation time as presently claimed.

Appellants disagree with the Examiner's assertion for at least the following reasons.

The cited passages of Holland might reasonably disclose that in order to lower redox potential in a general liquid media, the oxygen removal could be done via displacement with carbon dioxide, and when carbon dioxide is unsuitable due to pH concerns of the media, nitrogen or argon with a small content of hydrogen and carbon dioxide is used. However, the disclosure of Holland still does not provide a reasonable motivation to modify R1 to replace the CO<sub>2</sub> used in R1 process with N<sub>2</sub>, **because R1 specifically requires CO<sub>2</sub> gas continuously present** in the milk (col. 4, lines 34-47) during fermentation and emphasizes the importance thereof in terms of volatile aroma compounds.

Neither Holland nor Badr discusses or addresses the possible impact of aroma of the products by replacing the CO<sub>2</sub> used in R1 process with N<sub>2</sub>. It is respectfully submitted that there is no objective reason to modify the process of R1 to replace the CO<sub>2</sub> used in R1 process with N<sub>2</sub>.

Again, it is respectfully submitted that the method for producing fermented milk according to the present application provides an effect of improving physical properties of fermented milk, which is not taught or suggested in any of the cited references.

For the reasons of record, the reason set forth in the Appeal Brief, and the foregoing reasons, Appellants submit that the Examiner has failed to establish a *prima facie* case of obviousness. Appellants respectfully submit that the rejections should be reversed.

### **CONCLUSION**

For the above reasons as well as the reasons set forth in Appeal Brief, Appellant respectfully requests that the Board reverse the Examiner's rejections of all claims on Appeal. An early and favorable decision on the merits of this Appeal is respectfully requested.

Respectfully submitted,

/Sunhee Lee/

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Sunhee Lee  
Registration No. 53,892

/Yan Lan/

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Yan Lan  
Registration No. 50,214

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON DC SUGHRUE/265550

**65565**

CUSTOMER NUMBER

Date: October 6, 2010